1981

NORTHEASTERN AREA

FOREST PEST CONDITIONS

Summary of the Status of the
Major Forest Insect and Disease Pests

for

Connecticut (CT)	Missouri (MO)
Delaware (DE)	New Hampshire (NH)
Illinois (IL)	New Jersey (NJ)
Indiana (IN)	New York (NY)
Iowa (IA)	Ohio (OH)
Maine (ME)	Pennsylvania (PA)
Maryland (MD)	Rhode Island (RI)
Massachusetts (MA)	Vermont (VT)
Michigan (MI)	West Virginia (WV)
Minnesota (MN)	Wisconsin (WI)

The information for this report was supplied by State Forestry Agencies and the USDA Forest Service (Northeastern Area, State and Private Forestry, Forest Pest Management Staff, at the Portsmouth, NH, Morgantown, WV and St. Paul, MN Field Offices)

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In 1981, the most significant pest problems were caused by insect defoliators, especially the gypsy moth, spruce budworm, forest tent caterpillar and saddled prominent. Together these insects caused defoliation on over 21 million acres of hardwoods and conifers. The gypsy moth defoliated nearly 13 million acres. This was the largest outbreak of the pest ever to occur.

The major disease problems continue to be Scleroderris canker, beech bark disease, oak wilt, and white pine blister rust. Several new pests including the pine wood nematode, European larch needlecast, and European larch canker are causing concern.

These and other pest problems are listed alphabetically in either the "Status of Diseases" or "Status of Insects" section.

Thanks to all for their help and contributions.

STATUS OF DISEASES

Disease	Host	Location and Remarks
Anthracnose *Gnomonia* spp.	ash, oak sycamore	IN - Statewide; heavy defoliation of sycamore, heaviest year since 1974. NJ - Scattered. PA - Widespread. WV - Increased to moderate level throughout the state.
Armillaria root rot *Armillaria mellea* (Vahl ex Fr.) Kummer	conifers and hardwoods	Areawide - In VT invading dying sugar maple defoliated by saddled prominent.
Ash dieback	ash	OH - Occurring throughout the state. IN - Severe in northeast. MO - Nine counties statewide. PA - Northcentral part of state, 1000+ acres; 20% mortality in some stands.
Ash leaf rust *Puccinia peridermiospora* (Ell. & Tr.) Arth.	ash	MD - Heavy in some areas. PA - Southeastern part of state; 100% defoliation in and around Philadelphia.
Aspen leaf bronzing (cause unknown)	trembling aspen, bigtooth aspen, hybrid poplars	MN - Hubbard and Betrami Counties. WI - 20 to 30 locations; some branch mortality, first observed 1973.
Beech bark disease *Cryptococcus fagisuga* Lind. and *Nectria coccinea* var. *faginata* Loh. Wats. and Ay.	American Beech	New England, NY, NJ, PA - The disease continues to spread southward into southern PA and NJ. Scale populations are variable. WV - The disease was found here for the first time this year. Over 70,000 acres in Randolf and Pocahontas Counties were found infested with the scale insect, associated with the fungus *Nectria galligena* Bres.
Butternut canker *Sirococcus clavigignenti-juglandacearum* Nair, Kotichka, Kuntz	butternut	IA - Throughout the host species range. WI - Southwest; some healthy trees in generally infected sites tagged for resistant stock, 32% mortality in surveyed plots.

Disease	Host	Location and Remarks
Diplodia tip blight *Diplodia pinea* (Desm.) Kickx.	Austrian, jack red, Scots pine	IN - Statewide; tree and branch mortality of ornamentals. IA, MI, NJ - Scattered. MD - Scots pine plantations in 2 westerly counties. MA - Martha's Vineyard; 400 acres of ornamental plantings, salvaging. MN - Heavy infections of current year shoots in Itasca and St. Louis Counties (minor in 4 other northern counties). MO - Most severe on large Austrian pines. PA - Incidence increasing, 10 to 80% branch mortality on scattered trees throughout the state. WV - Heavy damage to individual trees. WI - Loss of 300,000 seedlings in Wilson and Griffith State Nurseries. At one nursery infection rate is 34%, up from 1% in 1980.
Dutch elm disease *Ceratocystis ulmi* (Buism.) C. Mor.	elm	Throughout Northeastern States - The disease continues to cause mortality of forest and urban elms. Incidence of the disease has greatly increased in MN and the upper peninsula of MI, while in ME a second "wave" of infection is devastating the remaining live trees. Mortality of younger trees continues in VT. In WI it is estimated that 50 percent of the population was lost from 1956 to 1978 and of the remaining larger elms 80 to 90 percent are infected. Through a demonstration project in that state 20 million of the 500 million cu. ft. of timber killed has been utilized.
Dwarf mistletoe *Arceuthobium pusillum* Pk.	black spruce red spruce	ME - Along the coast. MN - Northern part of state. NH - Several red spruce stands in WMNF infected. WI - Local problem in the north.

Disease	Host	Location and Remarks
European larch canker Lachnellula willkommii (Hartig) Dennis (Map 1)	tamarack	ME - Stands in six towns along the coast in Washington County were found infected, oldest cankers observed were 7 years old. This is the first finding of the disease in the United States since the infection discovered in 1924 in MA was eradicated.
European larch needlecast Mycosphaerella laricina (Hart.) Neg.	European larch	IA - Infection found in 2 counties, including the Yellow River State Forest. MI - Found in 1 county. WI - First US find was here in 1980. Now located in 4 counties (Trempenleau, Polk, LaCrosse, Grant) encompassing 3 plantations (16 acres) and Wilson State Nursery. Some branch and top dieback occurring.
European larch needle blight (cause unknown)	European larch	NY - Oswego County; larch needles dropped prematurely in August and trees refoliated. PA - 50 acres in 4 central counties; 10 to 95% defoliation.
Fir-fern rust Uredinopsis mirabilis (Pk.) Magn.	balsam fir	ME - Most severe infection in many years in some Christmas tree plantations. VT - Moderate to heavy infection of Christmas trees in scattered locations; lighter than previous years.
Fomes pini (Thore) Lloyd	European larch	NY - Two State owned plantations in Franklin County (13 acres) infected; area clearcut.
Hypoxylon canker Hypoxylon mammatum (Whal.) Mill.	aspen	Throughout host range, causing tree mortality in young stands in VT.
Larch decline	tamarack	ME, NH, NY, VT - Scattered mortality and accelerating general decline of larch throughout natural range. In VT mortality occuring over 8,000 acres.

Disease	Host	Location and Remarks
Lophodermium needlecast Lophodermium pinastri (Schrad. ex Hood) Chev.	Scots, red white pine	MI - Severe infection in Wyman Nursery. MO - Occasional problem. VT - Heavy damage to a Scots pine plantation in Bennington County. WV - Light damage in several Scots pine plantations.
Maple decline	sugar maple	ME - Roadside and forest trees; combination of winter damage and defoliation stress. MI - Marquette and Menominee Counties, upper peninsula. MO - Throughout the state. NY - Roadside, forest and sugarbush tree decline extreme in Oneida, Lewis, St. Lawrence, Franklin, Essex and Clinton Counties; mortality and reduced quantity and quality of sap occurring. WI - North; scattered mortality and top-kill.
Oak wilt Ceratocystis fagacearum (Bretz) Hunt (Map 2)	oak	IL, IA, OH, WV - Throughout the state, incidence same as previous year. IN - Scattered trees infected; 1,000 to 5,000 bd. ft. lost in Greene County. MD, PA - Moving into eastern part of state. MI - New area in Menominee County (upper peninsula). MN - Widespread in the southern half of the state, causing numerous problems for homeowners and small woodlot owners. MO - Only scattered cases found, down dramatically from damaging levels of past years. WI - Southern half of the state; previous infection centers enlarging, but no new infection sites.
Pinewood nematode Bursaphelenchus xylophilus (Steiner and Buhrer) Nickle (Map 3)	20 species of pine, cedar, spruce, tamarack European larch, balsam fir	Found in all 20 Northeastern Area States except RI, ME, and NH (found in 34 states nationwide) - The nematode, formerly thought to have been introduced from Japan, is now believed to be native to the US. This is based on preserved specimens collected in Louisiana in 1934. Thus, damage from this pest will probably not increase drastically.

Disease	Host	Location and Remarks
Rhabdocline needlecast Rhabdocline pseudotsugae Syd.	Douglas fir	ME - Heavy damage in many Christmas tree plantations.
Sapstreak of maple Ceratocystis coerulescens (Munch)	sugar maple	MI, WI - Killing a few forest trees. NY - Causing tree mortality in 2 northern sugarbushes. VT - One sugarbush tree found infected.
Scleroderris canker Gremmeniella abietina (Lagert.) Morelet (Map 4)	Scots, jack and red pine	As in 1980, the spread of Scleroderris canker was reduced in all the affected States in 1981. The more virulent European strain of the fungus has not been found in the Lake states, only in NY, VT, NH and ME. ME - No new infections. NH - No infection found since initial find in 1978. NY - Only 1 new town (in Clinton County) added to the quarantine which includes 13 counties, scattered heavy infection. A dual infection period in 1981 due to warm temperatures in February increased the infection rate and may result in increased spread of the disease next year. VT - No new towns found infected; 55 towns are now quarantined (94 plantations encompassing 767 acres, with tree mortality occurring on only 40 acres). MI, MN, WI - Infection down; hard to find infection in known stands; no new tree mortality in infected plantations.
Septoria leaf spot Septoria musiva Pk.	balsam poplar	MN - 200,000 acres defoliated in 13 northern counties.
Sirococcus shoot blight Sirococcus strobilinus Preuss.	red pine	In the following areas mortality of understory seedlings and saplings and shoots of understory trees is occurring. Severity increased in 1981. MI - Upper peninsula; Ottawa National Forest MN - Northern part of state; Superior National Forest. WI - Northern areas; N. Highland State Forest, Nicolet National Forest.

Disease	Host	Location and Remarks
Spruce decline	spruce	NY - Essex, Clinton, Franklin, St. Lawrence, Jefferson and Lewis Counties; mortality occurring over vast areas.
Verticillium wilt *Verticillium albo-atrum* Reinke & Berth.	elm	VT - Dying elms in Addison County.
White pine blister rust *Cronartium ribicola* Fisch	eastern white pine	ME - Moderate to heavy infection on ribes; 37,000 acres scouted, isolated treatment. MI, MN, WI - Still the major disease problem of white pine. VT - Low level; 10 acres eradicated, will eradicate near state nursery in Essex.
White pine root decline *Verticicladiella procera* (Kend.)	eastern white pine	IL - Found in most plantations on Shawnee NF. IN - Mortality in Christmas tree plantations; decrease over past years. PA - Statewide; 2 to 3% current infection, 10% mortality, decreasing. WV - Continued problem in plantations.
Winter injury	all species	ME - Death of many ornamental and fruit trees. PA - Half the state; 90% mortality in some spruce plantations. VT - Entire stands browned up, especially on southern slopes.

STATUS OF INSECTS

Insect	Host	Location and Remarks
Aspen leafroller complex Large aspen tortrix Choristoneura conflictana (Walker) Anacampsis sp.	aspen	MI - Most stands in lower peninsula severely defoliated; some top kill and tree mortality occuring.
Birch leaf roller Ancylis discigerana Walker	yellow birch	VT - 7,500 acres in Essex County defoliated.
Birch leaf miner Fenusa pusilla (Lepeletier)	white, gray birch	VT - Throughout the State.
Birch skeletonizer Buccalatrix canadensisella Chambers	white birch	MN, VT, WI - Late season defoliation; scattered throughout these states. MI - Heavy defoliation in upper peninsula.
Black turpentine beetle Dendroctonus terebrans (Olivier)	Japanese, Scots pine	MA - Building on south shore of Cape Cod, stable on Martha's Vineyard and Nantucket Island.
Eastern tent caterpillar Malacosoma americanum (Fabricius)	cherry	IN - Southern part of State; no population increases, no mortality expected. IA - Heavy infestations Statewide. MO - High populations (5 to 10 webs per tree) scattered over 3 million acres in south. OH - Scattered. VT - Populations much reduced. WV - All time high populations.
Elm spanworm Ennomos subsignarius (Hubner)	elm, beech basswood, birch	MI - 500,000 acres in northern portion of the lower peninsula; heavy beech defoliation, mortality expected; populations collapsed in upper peninsula.

Insect	Host	Location and Remarks
European pine sawfly Neodiprion sertifer (Geoffrey)	Austrian, Scots red pine	IN - 4,000 acres affected in south. IA, MO - Scattered infestations, moderate to heavy. MI - Second year of high populations in the lower peninsula. WI - 1,600 acres scattered heavy defoliation in 12 southernmost counties
Fall cankerworm Alsophia pometaria (Harris)	red oak and other hardwoods	ME - In association with gypsy moth and leaftier-roller complex; some crown dieback; dramatic increase in population level over last year.
Fall webworm Hyphantria cunea (Drury)	hardwoods	Area wide - Defoliation up slightly over last year, heavy in IN and WV.
Forest tent caterpillar Malacosoma disstria Hubner (Map 5) (Table 1)	hardwoods	Populations increased in all areas in 1981. ME - Almost one half million acres were defoliated, infestation four times larger than previous year; affecting primarily poplars, thus basically a nuisance problem. MN - Widespread in northeast, nearly one million acres were defoliated and mortality is occuring in areas defoliated in the past four years. NY - Epidemic in Delaware County; large sugarbush areas are affected. VT - Populations increased statewide; defoliation twice as much as last year, dieback in some areas defoliated three years; mortality in some sugarbushes; chemically treated 600 acres of sugarbushes, mostly in Lamoille County. WI - 1.4 million acres defoliated in six northernmost counties, population is increasing and moving southeast, so far little mortality. MD - Associated with other defoliators on 200,000 acres. MI - Moderate defoliation in upper peninsula.
Greenstriped mapleworm Dryocampa rubicunda (Fabricius)	red, silver maple	MA - Increasing in west, found in areas of saddled prominent defoliation. ME - Eastern part of State; declined this year. MO - Jackson County.

Insect	Host	Location and Remarks
Gypsy moth *Lymantria dispar* (L.) (Map 6) (Table 2)	hardwoods and some conifers	In the northeastern US, nearly 13 million acres were defoliated, an increase of almost 8 million acres compared to 1980. This is the largest outbreak ever. Generally infested area - includes all or part of eleven states from MD to ME. Defoliation in every state affected increased greatly, except for NY where defoliation was already high last year with over 2 million acres defoliated. States where defoliation increased by over one million acres include CT, MA, NH, and PA. Outside generally infested area - the gypsy moth has been reported in 18 other states including: IL - Moth catches in thirteen counties, heaviest around Chicago. MI - Parts of five counties infested, defoliation on eighteen acres. MN - Moths detected in Minneapolis/ St. Paul and Rochester. MO - Moths detected in four counties. OH - Moths found in numerous areas throughout the State. WV - Eastern panhandle infested. WI - Moths detected in Madison area.
Introduced pine sawfly *Diprion similis* (Hartig)	white, Scots, red pine	ME - South central; scattered light to moderate populations. MI - Isolated reports, lower peninsula. MN - Local outbreaks annually. VT - Scattered light defoliation.
Jack pine budworm *Choristoneura pinus* Freeman	jack pine	MI - 550,000 acres in the lower peninsula infested; outbreak levels on Huron and Maniste National Forests, much more severe than last year. MN - Endemic levels. WI - 140,000 acres, mostly light to moderate defoliation in two northernmost counties. No mortality of pole size timber occuring.
Larch casebearer *Coleophora laricella* Hubner	larch	VT - Scattered along Champlain Valley, populations collapsed from heavy 1980 infestations.

Insect	Host	Location and Remarks
Larch sawfly *Pristiphora erichsonii* (Hartig)	larch	MN - Light defoliation in northern counties. VT - Central part of State; light defoliation.
Loopers *Erannis tiliaria* (Harris) *Phigalia titea* (Cramer)	hardwoods	IN - Epidemic; 140,000 acres defoliation in 17 counties, central portions of State. MD - Associated with other defoliators on 200,000 acres. MO - From one county near St. Louis in 1979 to almost entire southern portion of the State in 1981. OH - Scattered defoliation. VT - 4,700 acres in Addison County; occurs with gypsy moth. WV - 1.5 million acres defoliated.
Maple leafcutter *Paraclemensia acerifoliella* (Fitch)	sugar maple	MI - 1000 acres heavily infested; lower peninsula. NH - Southern half of State, populations building; increasing infestations in sugarbushes along the Connecticut River, especially Sullivan County. VT - Declining populations, only 6,600 acres compared with 25,000 acres in 1980.
Maple trumpet skeletonizer *Epinotia aceriella* (Clemens)	sugar maple	MI - Heavy populations throughout the upper peninsula. VT - Light to moderate defoliation. WI - Northern half of State, 100,000 acres heavy to severe defoliation.
Nantucket pine tip moth *Rhyacionia frustrana* (Comstock)	pitch pine	MA - Infestation in southeastern part of State; stable on Cape Cod, building in Plymouth County (along with pine needle miner and pine looper). MD - Ongoing problem in young pine plantations.
Oak leaf tier *Croesia semipurpurana* (Kearfott)	oaks	MO - Light to moderate populations. MD - Central part of State; homeowner complaints. MA - Declining after two year buildup; overrun by gypsy moth. IN - Associated with loopers.

Insect	Host	Location and Remarks
Oak mortality complex of oak leaf roller Archips spp., Twolined chestnut borer Agrilus bilineatus (Weber), Armillaria mellea root rot	oak	IN - South central part of State; scattered mortality. MI - Central lower peninsula, losses of a few to many trees per acre. Chippewa Co. in upper peninsula.
Pine tussock moth Dasychira pinicola (Dyar)	jack, red pine	MN - Endemic over 5000 acres jack pine in Pine County. WI - Infestation two years old and increasing; 60,000 acres in two northernmost counties, 10,000 acres with scattered mortality and top kill.
Red pine scale Matsucoccus resinosae Bean & Godwin (Map 7)	red, Japanese, Chinese pine	CT - Throughout western part of State; still south of natural range of red pine, spreading 1 to 2 miles per year (also a report of adelgid injury caused by Pinus boerneri Annard) NJ - Passaic and Bergin Counties along the NY border. NY - Found this year in northern Orange County, spreading 3 miles per year north and west; infestation is consistently severe, kills trees rapidly (4 to 5 years after infestation). PA - Recently reported at the Morris Arboretum in Philadelphia.
Saddled prominent Heterocampa guttivitta (Walker) (Map 8) (Table 3)	northern hardwoods	ME - Increased 17 fold over 1980 infestation; some branch mortality, tree mortality expected next year. MA - Berkshire area, western part of State; increased infestation. NH - Encompasses 7 counties, especially Sullivan County; record infestation, second year of heavy defoliation, branch dieback and tree decline. NY - No significant defoliation occurred in 1981. VT - Defoliation down by 10,000 acres; tree mortality occuring over 2,000 acres, mostly in Windham and Windsor Counties.

Insect	Host	Location and Remarks
Saratoga spittlebug Aphrophora saratogensis (Fitch)	red, jack, Scots pine	MI - Low populations building slightly; northern portion of lower peninsula, only 1 area at damaging level. MN - At low populations in plantations; Some plantations damaged in Betrami and Mahroven Counties. WI - Isolated pockets; declining populations.
Southern pine beetle Dendroctonus frontalis Zimmerman	loblolly pine	MD - 10 acres detected and clearcut, beetle activity low in 1981.
Spruce budworm Choristoneura fumiferana (Clemens) (Map 9) (Table 4)	Spruce and fir	In 1981 the budworm defoliated 4.4 million acres, 2 million less than 1980. In the Lake States only 355,000 acres were defoliated, compared to 1.4 million acres in 1980. ME - 4 million acres moderate to severe defoliation, lessened since peak of 1978; egg deposits in sprayed areas low to moderate, egg deposits reduced in west central part of state even with little spray, mortality occuring in unsprayed areas including buffer zones, 200,000 acres with 50%+ mortality of host type dead or moribund, 1.16 million acres treated in 1981 (carbaryl, acephate, Bt). MI - Population collapse in scattered light infestations lower peninsula; mortality throughout upper peninsula, heaviest in Iron County. MN - Lake and St. Louis Counties, little defoliation in Cook and Carlton Counties; slight decrease in populations from last year; salvage operations continue. NH - Acres defoliated decreased by 50% from 1980; stand deterioration over 42,000 acres, half of which contains 50% or more dead tops and many dead trees, damage now occuring on smaller stands of fir on small ownerships, salvage harvesting.

39000 - 1982

18000

Insect	Host	Location and Remarks
Spruce budworm (continued)	spruce and fir	VT - Slight decrease in acres reported defoliated, somewhat due to heavy salvage cuts, populations stabilized; in Orleans County estimated loss of 448,000 cords per year. WI - Collapse of epidemic population, numerous larval and pupal parasites.
White pine weevil Pissodes strobi (Peck)	white, jack, Scots pine	Areawide - Continuous problem. MI - High levels on Marquette Forest. MN - Northern counties; jack pines less than 8 ft. in height infested, up to 160 trees per acre affected. VT - Stable at moderate levels, damaging Scots pine near white pine in New Haven. WI - Scattered white and jack pine in northwest.
Yellow-headed spruce sawfly Pikonema alaskensis (Rohwer)	white spruce	MN - Varying populations in north, primarily on ornamentals.
Zimmerman pine moth Dioryctria zimmermani (Grote)	red pine	IN - Minor damage, ornamental trees. MI - Lower peninsula; growth reduction in heavily hit stands, mostly trees greater than 30 ft. in height; infestation more severe than 1980. WI - Central and southern counties; severe tree deformity in heavily attacked stands; high parasitism of late instar larvae, population declining.

Table 1. Extent of tree defoliation caused by forest tent caterpillar (Malacosoma disstria) in the Northeastern Area, 1981.

State	Acres Defoliated
Maine	457,000
Minnesota	890,000
New York	200,000
Vermont	117,000
Wisconsin	1,400,000

Table 2. Recent trend in the acreage of aerially detected tree defoliation caused by gypsy moth (Lymantria dispar) in the Northeastern Area and acres sprayed under the Federal-State Cooperative Suppression Program in 1981.[1]/

State	Acres defoliated		Trend	1981 Federal-State Cooperative Suppression Program Acres Sprayed[2]/
	1980	1981		
Connecticut	381,868	1,482,216	+1,100,348	-
Delaware	0	500	+ 500	-
Maine	221,220	655,841	+ 434,621	465
Maryland	3	8,826	+ 8,826	-
Massachusetts	907,075	2,826,095	+1,919,020	-
New Hampshire	183,999	1,947,236	+1,763,237	-
New Jersey	411,975	798,790	+ 386,815	75,825
New York	2,449,475	2,303,915	- 145,560	63,917
Pennsylvania	440,500	2,527,753	+2,087,253	178,230
Rhode Island	43,830	272,556	+ 228,726	22,625
Vermont	41,327	48,979	+ 7,652	-
Total	5,081,272	12,872,7072	+7,790,938	341,062

1/Information provided by cooperating State agencies and UDSA APHIS and Forest Service.

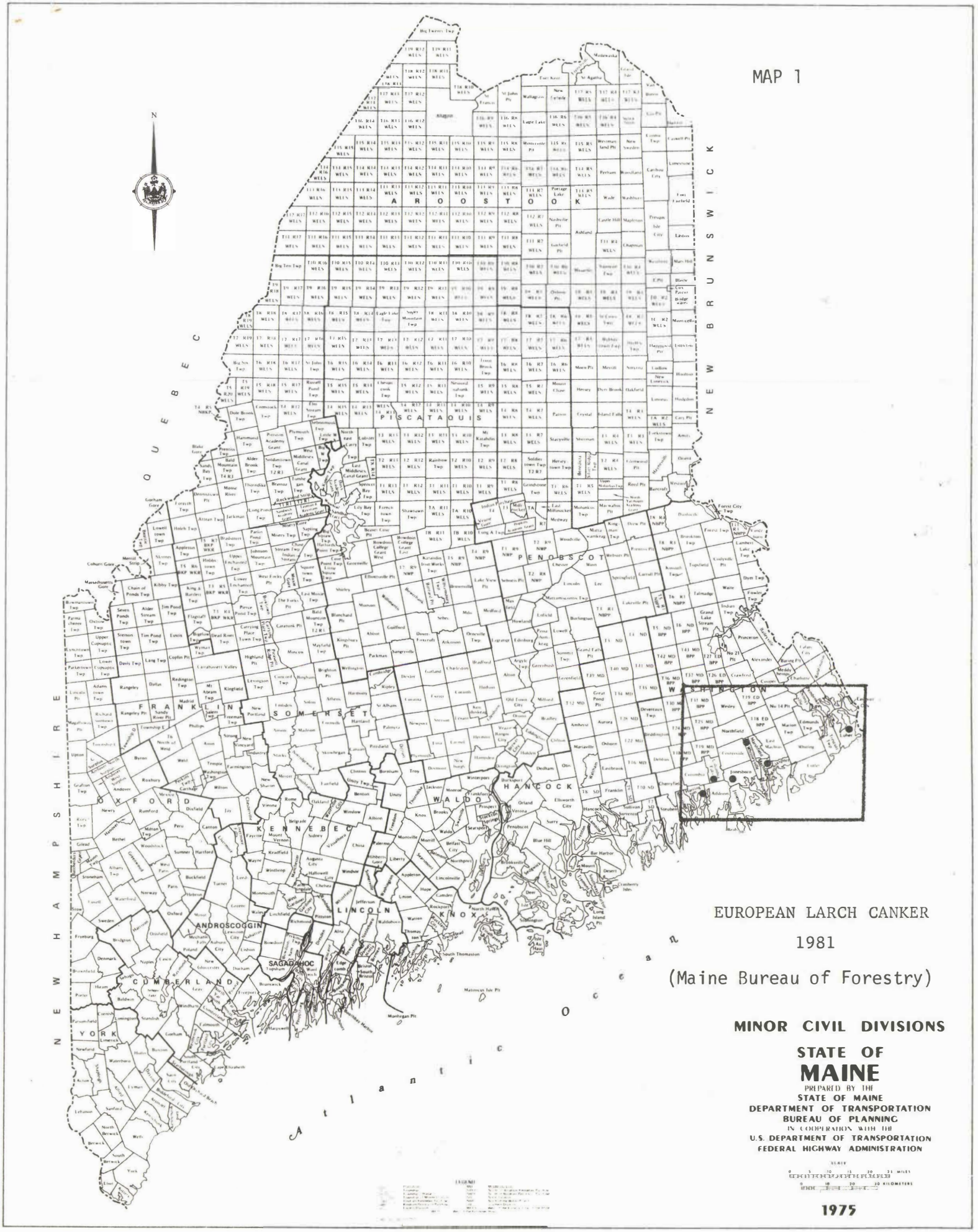
2/Gypsy Moth Federal-State Cooperative Suppression Projects - 1981.
(Additional areas were sprayed privately in several of the affected states outside of the cooperative program.)

Table 3. Extent of tree defoliation caused by saddled prominent (Heterocampa guttivitta) in the Northeastern Area, 1981.

State	Acres defoliated
Maine	187,000
Massachusetts	173,000
New Hampshire	522,000
Vermont	26,700

Table 4. Recent trend in acreage of aerially detected tree defoliation caused by spruce budworm (Choristoneura fumiferana) in the Northeastern Area.

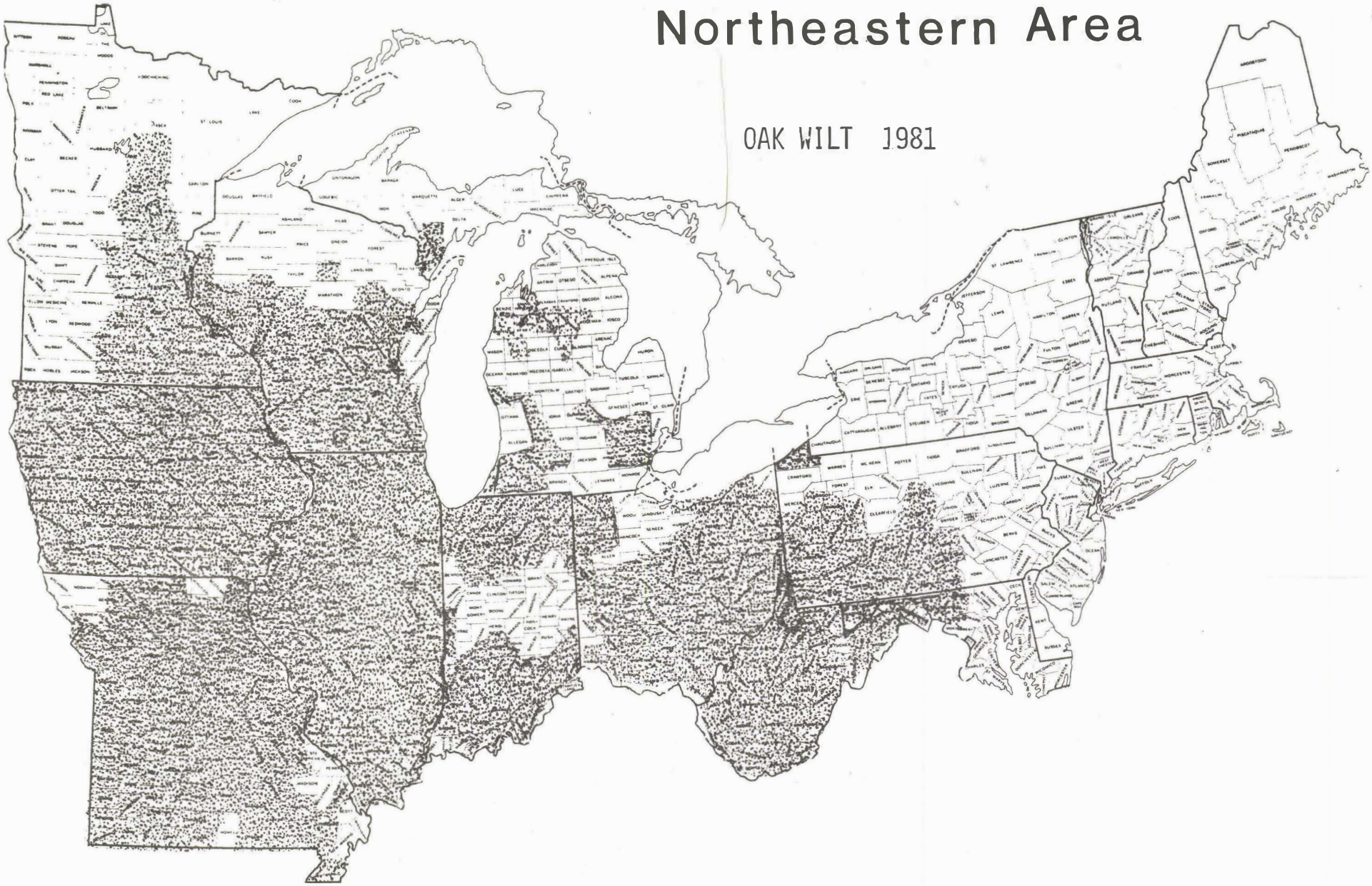
State	Acres Defoliated		
	1980	1981	Trend
Maine	5,000,000	4,000,000	-1,000,000
Michigan	859,000	161,000	- 698,000
Minnesota	103,000	110,000	+ 7,000
New Hampshire	90,000	42,000	- 48,000
Vermont	111,000	94,000	- 17,000
Wisconsin	439,000	84,000	- 355,000
Total	6,602,000	4,491,000	-2,111,000


MAP 1
EUROPEAN LARCH CANKER
1981
(Maine Bureau of Forestry)
MINOR CIVIL DIVISIONS
STATE OF
MAINE
PREPARED BY THE
STATE OF MAINE
DEPARTMENT OF TRANSPORTATION
BUREAU OF PLANNING
IN COOPERATION WITH THE
U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
1975
QUEBEC
NEW BRUNSWICK
NEW HAMPSHIRE
ATLANTIC OCEAN
AROOSTOOK
PISCATAQUIS
PENOBSCOT
WASHINGTON
HANCOCK
WALDO
KNOX
LINCOLN
SOMERSET
FRANKLIN
OXFORD
KENNEBEC
ANDROSCOGGIN
SAGADAHOC
CUMBERLAND
YORK

MAP 2

Northeastern Area

OAK WILT 1981

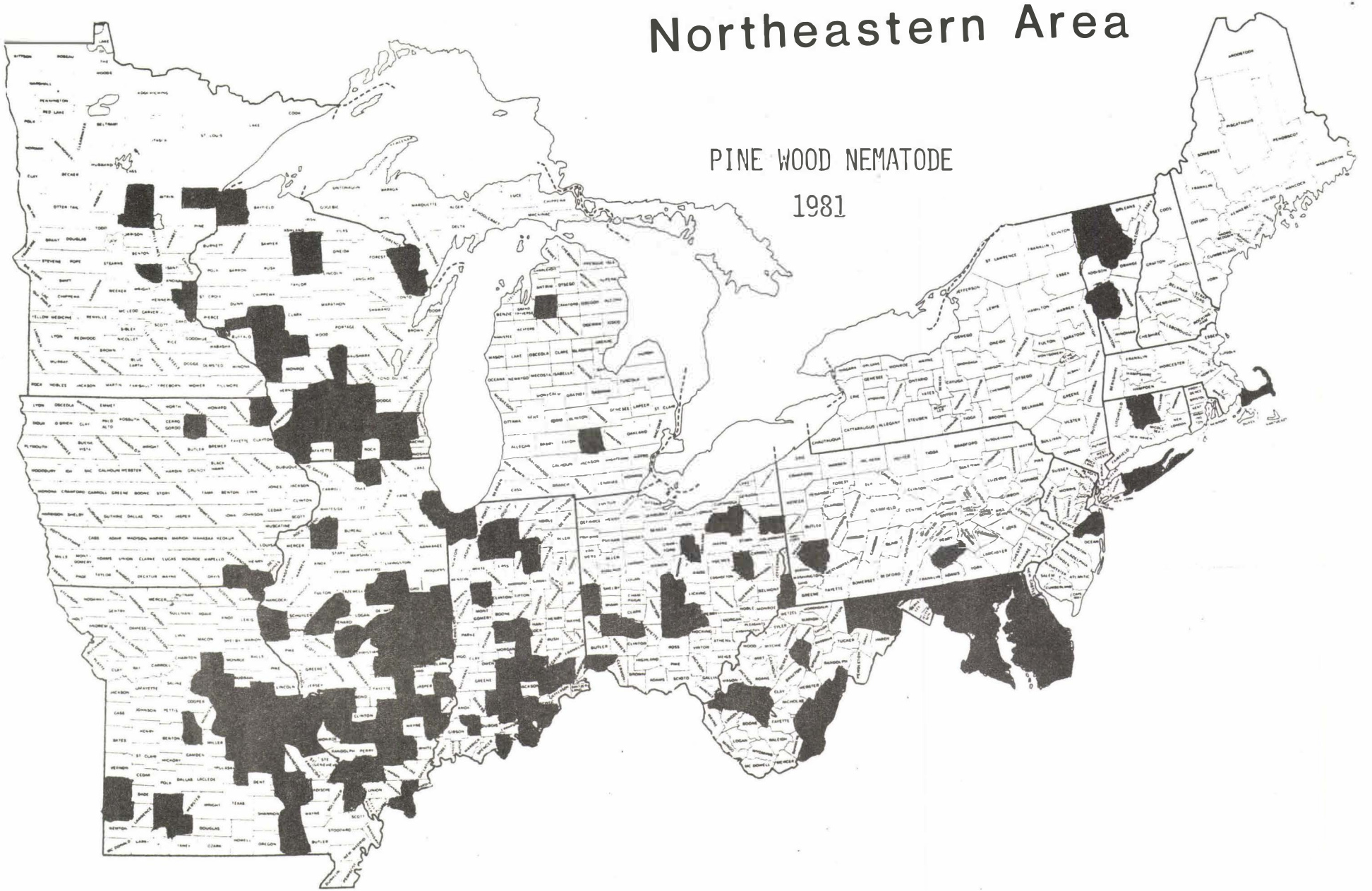


MAP 3

Northeastern Area

PINE WOOD NEMATODE

1981

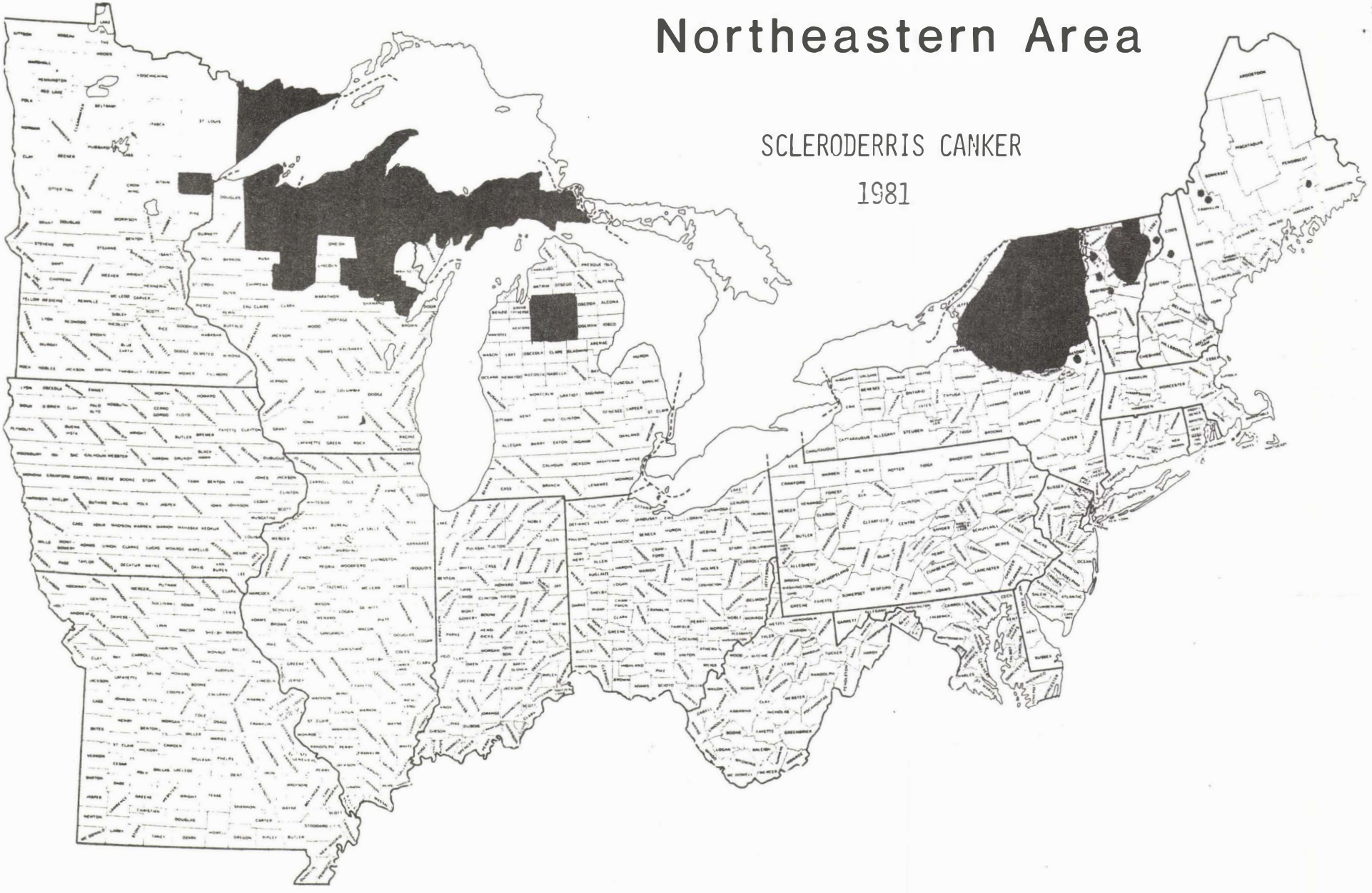


MAP 4

Northeastern Area

SCLERODERRIS CANKER

1981

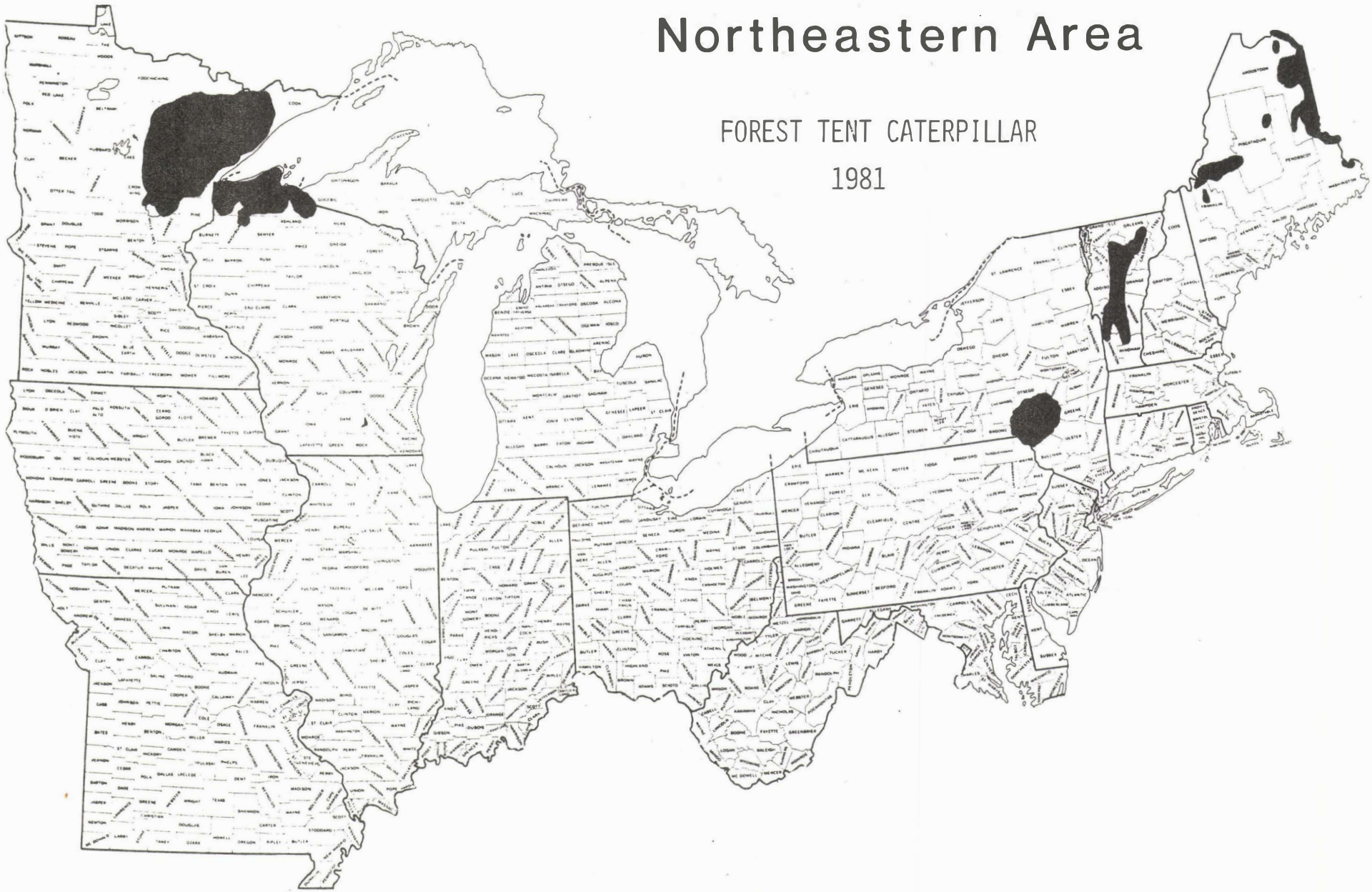


MAP 5

Northeastern Area

FOREST TENT CATERPILLAR

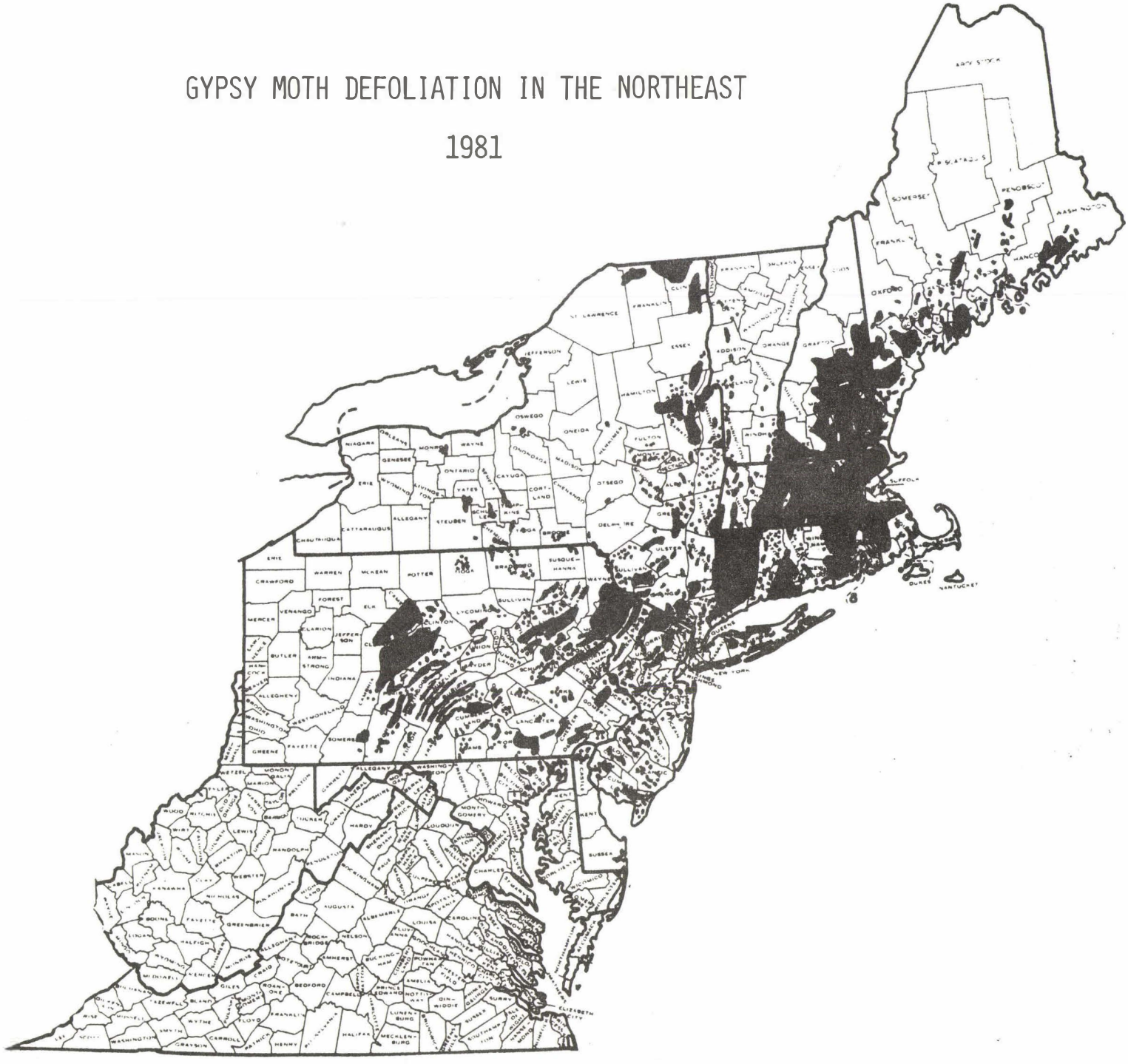
1981



MAP 6

GYPSY MOTH DEFOLIATION IN THE NORTHEAST

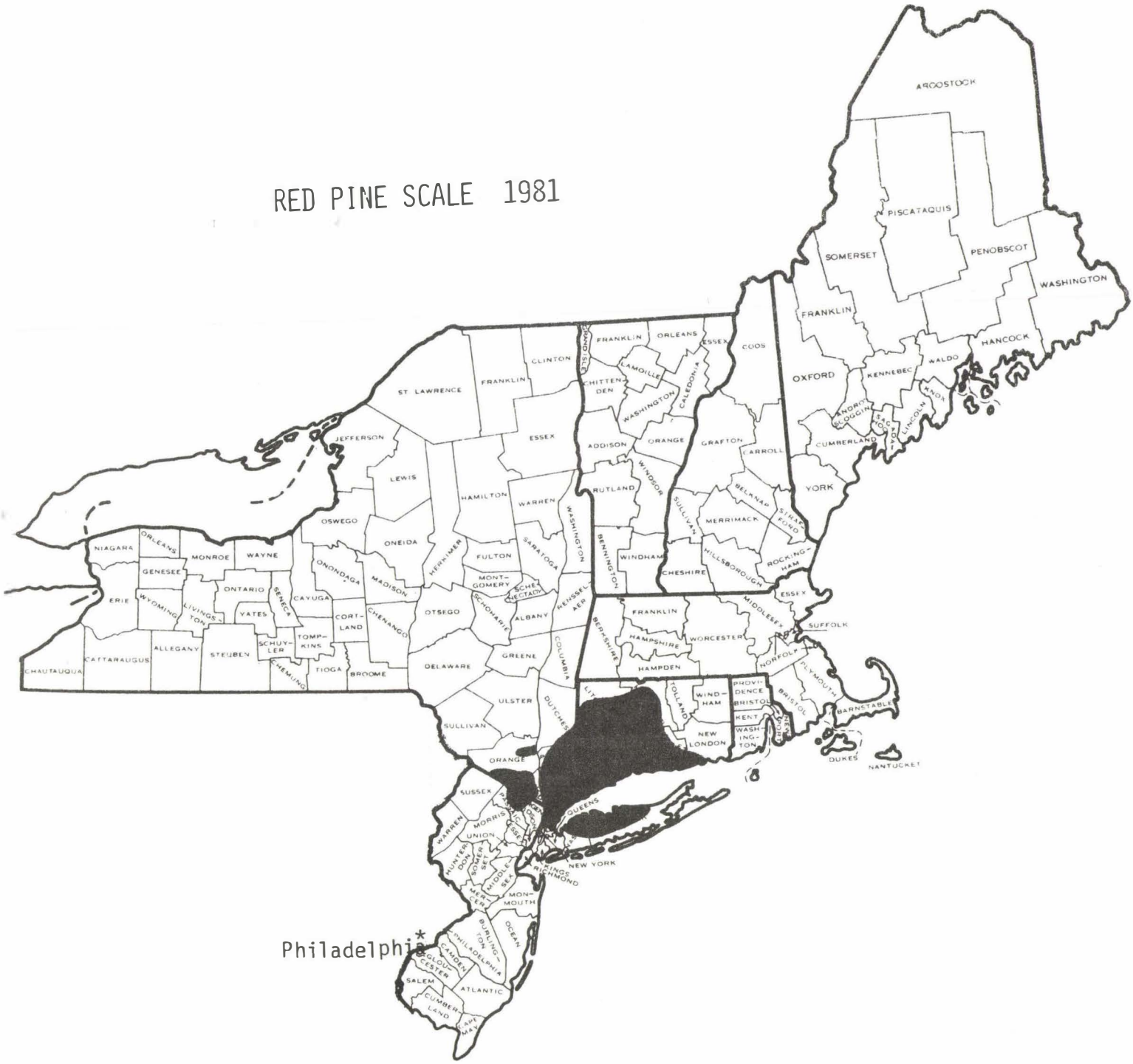
1981



(PREPARED BY USDA FOREST SERVICE BASED ON STATE SURVEYS)

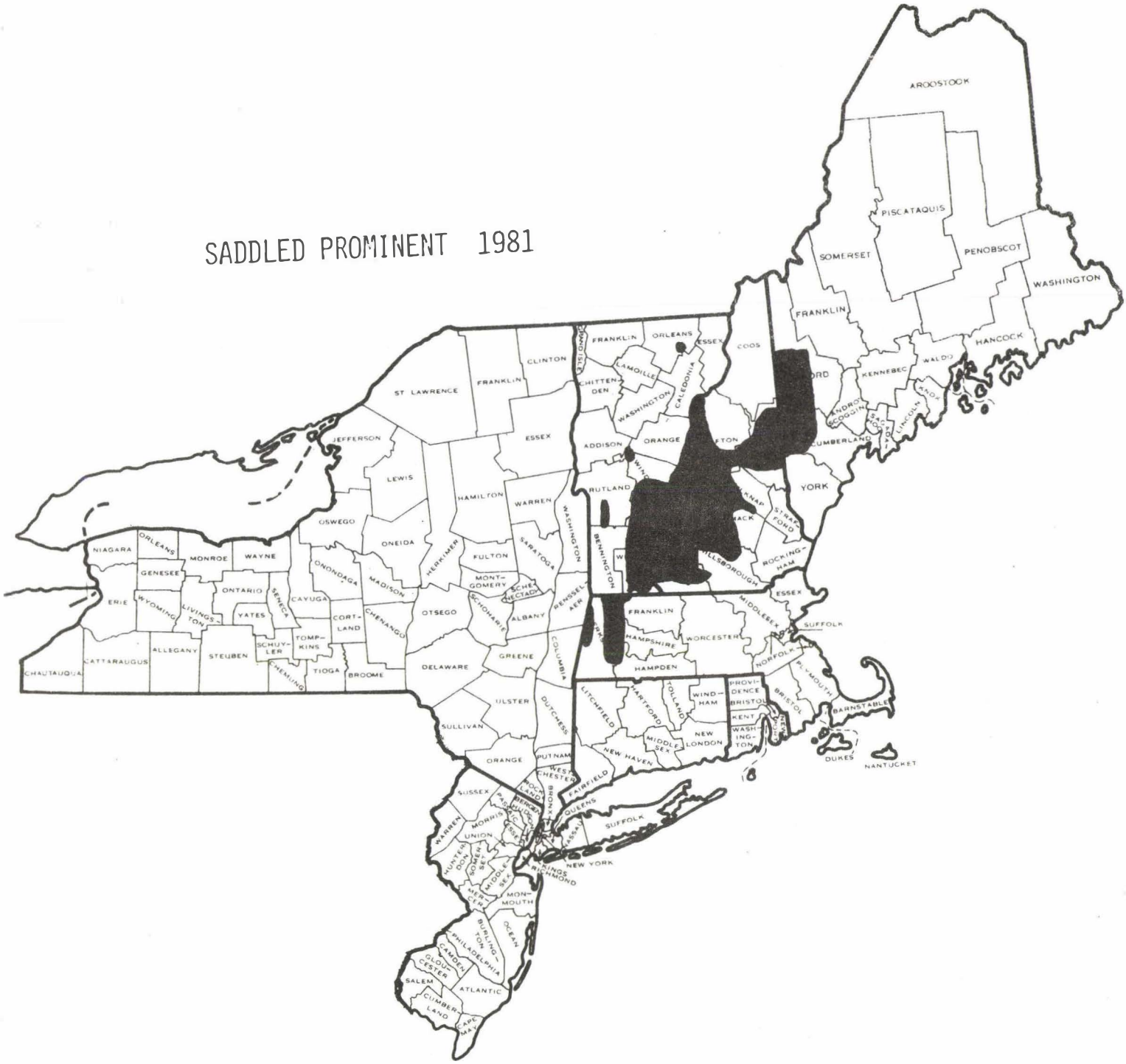
MAP 7

RED PINE SCALE 1981



MAP 8

SADDLED PROMINENT 1981



MAP 9

Northeastern Area

SPRUCE BUDWORM 1981